AIR MOVEMENT & VENTILATION CONTROL WITHIN BUILDINGS

12th AIVC Conference, Ottawa, Canada
24-27 September, 1991

POSTER 8

Annex 20 SubTask 2.6
Multi-room Ventilation Efficiency

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Short Summary for the AIVC conference in Ottawa.
This paper belongs to the group of Annex 20 Subtask 2 papers.
A poster presentation is prefered.

Title:

ANNEX 20 Subtask 2.6.
Multiroom Ventilation Efficiency.

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Summary.

Seen from the AIVC Technotes 21 and 28, Ventilation Efficiency is still a complex concept. Aswell for measurements as for simulations.
Two more or less separate terms are used:

Ventilation Efficiency (=Supply Efficiency)
and
Ventilation Effectiveness (=Contaminant Removal Effectiveness).

In this paper is shown that the Multizone Ventilation Efficiency has a much wider range than Ventilation Efficiency within one room.
In a single room efficiencies can be found for example up to 2 for very good systems. The Multizone Ventilation Efficiency can be for example up to 100 for a good design and system, even if internal doors are used.

Both Ventilation Efficiency terms (Supply - and Removal -) are integrated by looking at the room volume weighted concentrations or concentrations near occupants. This results in a single figure, which does take both phenomenae (Supply - and Removal -) into account. Hereby the complexity of Ventilation Efficiency is greatly reduced. This figure will be called the Ventilation Performance Index (VPI).

A measurement method for VPI is introduced.

A computer code routine is presented that calculates the VPI for multizone airflow models that simulate spread of pollutants.

A procedure is described that uses the VPI to find the optimal ventilation flowrates during the seasons to optimize concentrations and ventilation heatlosses.

All use of indices has limitations. The main limitation on the use of the VPI is the chosen distribution of pollutant sources in the simulated or measured building. A number of examples are given that show the limitations of use for the VPI.

It is expected that the use of the VPI will ease and improve the quality of the analysis of measurement campaigns and series of simulation runs. Building designs can be optimised more thoroughly. Effects of improvements or retrofits on existing buildings can be ranked.